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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/779,125 | 02/07/2001 | Masumi Sakai | 0800239.0129 | 7697 |

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| EXAMINER |
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LAVARIAS, ARNEL C

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| ART UNIT | PAPER NUMBER |
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2872

DATE MAILED: 03/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/779,125

Applicant(s)

SAKAI, MASUMI

Examiner

Arnel C. Lavarias

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12,13,15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12,13,15 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment After Final filed by the Applicant on 2/11/04 has not placed the application in the condition of allowance; however, the amendment After Final filed by the Applicant has been entered for the following reason(s).
2. The application was refiled under 37 CFR 1.114 with a Preliminary Amendment in a paper marked 'Preliminary Amendment "B"', dated 9/8/03. It is noted that in the preliminary amendment of 9/8/03, the Applicant failed to make any amendments to the claims, and the remarks of that date did not state that a supplemental or other preliminary amendment would be filed at a later date.

The application was re-examined by the Examiner on 10/24/03 and a final Office Action mailed 11/10/03, which is more than one month from the date the Applicant refiled the application. The Examiner was unaware that the Applicant filed a paper, marked 'Preliminary Amendment "C"', dated 10/31/03, that includes amendments to Claims 1, 12-13, and 17, and thus the final Office Action mailed 11/10/03 does not address issues made in 'Preliminary Amendment "C"'.

In response to the final Office Action mailed 11/10/03, Applicants filed an after-final amendment marked 'Amendment "D" After Final Action', dated 2/11/04, proposing cancellation of Claims 1-11, 14, 17, proposing amendments to Claims 12, 15, and providing Applicant's remarks regarding the final Office Action mailed 11/10/03. However, amendments were made to Claims 12 and 15, which were amended by the preliminary amendment of 10/31/2003. It is also noted that the Applicant did not request

for a clarification of the claims to be examined or to request a correction to the oversight as described above.

A careful review of the claims has resulted in the above mentioned problems being found by the Examiner, and in the spirit of cooperation and to avoid prolonging prosecution of the instant case, the finality of the rejection of the last Office Action mailed 11/10/03 is withdrawn, and this Office Action is being issued to address issues made in both 'Preliminary Amendment "C"', dated 10/31/03, and 'Amendment "D" After Final Action', dated 2/11/04, which has been entered into the record.

Response to Amendment

3. The amendments to Claims 1, 12-13, and 17 in the submission dated 10/31/03 are acknowledged and accepted.
4. The submission dated 2/11/04 has been entered into the record as follows.
5. The cancellation of Claims 1-11, 14, and 17 in the submission dated 2/11/04 is acknowledged and accepted.
6. The amendments to Claims 12 and 15 in the submission dated 2/11/04 are acknowledged and accepted.

Response to Arguments

7. The Applicant argues that, with respect to newly amended Claim 12, Egan et al. in view of Pettit et al., and further in view of Schmider et al. fails to teach or reasonably suggest a furnace-type atomic absorption spectrophotometer, including controlling

Art Unit: 2872

indicial response characteristics of the heating control means in units of milliseconds, and parameter setting means to set at least one of the parameters for PID calculation. The Examiner respectfully disagrees. With regard to controlling indicial response characteristics of the heating control means in units of milliseconds, Egan et al. in view of Pettit et al. already discloses controlling indicial response characteristics of the heating control means. Further, it is disclosed that this is done in units of seconds (See for example col. 3, lines 40-59 of Egan et al.). By standard SI unit conversion, 1 second is equivalent to 1000 milliseconds. Thus, one skilled in the art would realize that the controlling may be done in units of milliseconds instead of seconds. In response to parameter setting means to set at least one of the parameters for PID calculation, the Examiner notes that Egan et al. in view of Pettit et al. already discloses this feature (See Section 6 of Office Action dated 11/10/03), and that Schmider et al. is being relied upon to provide additional teachings regarding parameter setting means adjusting parameters according to the kinds of elements to be detected. It is noted that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

8. Claims 12-13, 15-16 are rejected as follows.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2872

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 12-13, 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Egan et al. (U.S. Patent No. 4159876), of record, in view of Pettit et al. (U.S. Patent No. 4669040), of record, and Schmider et al. (U.S. Patent No. 4225234), of record.

Egan et al. discloses a furnace-type atomic absorption spectrophotometer comprising a tube for heating a sample (See 2 in Figure 1; col. 3, lines 27-59), monitoring means for monitoring temperature of the tube (See upper portion of Figure 1, minus the DC-AC Converter and workhead; circuitry around 21, including 12, R₁, and 21 in Figure 5) and outputting a monitored value indicative of the monitored temperature (See 15 in Figure 5), heating control means (See lower portion of Figure 1, including the DC-AC Converter and workhead; Lower portion of Figure 5; Figure 6) for controlling heating current for heating the tube such that the monitored value will approach a specified target temperature value, and parameter setting means (See for example 7, 8, 9, 25, 'Ramp Rate' in Figure 5; col. 5, lines 5-17) for adjusting parameters according to conditions of measurement and thereby controlling indicial response characteristics, at a time of raising temperature (See for example 7, 8, 9, 25, 'Ramp Rate' in Figure 5; col. 5, lines 5-17), of the heating control means in units of milliseconds (See for example col. 3, lines 40-59; by standard SI conversion, 1 second is equivalent to 1000 milliseconds) when the tube is heated by the heating control means (See col. 3, line 1-col. 6, line 7). Egan et al. additionally discloses the parameter setting means including an input device for allowing a user to input parameters (See 7, 8, 9, 25, 'Ramp Rate' in Figure 5; col. 4, lines 5-40),

and an input device for allow a user to input a condition corresponding to the parameters (See 7, 8, 9, 25, 'Ramp Rate' in Figure 5; col. 4, lines 5-40). Egan et al. also discloses that the monitoring means monitors values indicative of the temperature of the tube (See 15 in Figure in Figure 5; col. 4, lines 52-68). Egan et al. lacks the heating control means *digitally* controlling heating current for heating the tube, or the parameter setting means adjusting parameters according to kinds of elements to be detected. However, Pettit et al. teaches a self-tuning digital PID controller for applications such as plastic extruders and continually operable furnaces and ovens (See col. 1, lines 20-44; col. 13, lines 46-62). In particular, the digital PID controller is able to determine the appropriate PID tuning parameters, which include that standard proportional, integral, and differential parameters (See Abstract; col. 7, lines 12-25), and set the system to utilize these parameters (See col. 7, line 12-col. 8, line 61). Additionally, the self-tuning digital PID controller includes a microprocessor and non-volatile electrically alterable read-only memory (See col. 9, lines 33-55) to digitally process and store the calculated parameters for later use. The combined teachings of Egan et al. and Pettit et al. lack the parameter setting means adjusting parameters according to kinds of elements to be detected. However, Schmider et al. teaches a flameless atomic absorption spectrophotometer apparatus and method wherein a control panel of a programmable digital controller is used to provide input parameters to control various aspects of the flameless atomic absorption spectrophotometer, such as numerical values for the temperatures, slope of the temperature ramps, duration of temperature plateaus, and gases used during the temperature ramping and plateaus (See col. 3, line 11-col. 4, line 26). The Examiner

notes that the atomization of specific elements is highly dependent on the above parameters (i.e. the atomization of copper requires a set of parameters that is different from the atomization of calcium); hence one skilled in the art is certainly expected to adjust these parameters, whether manually or automatically, based on the element to be analyzed. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the self-tuning digital PID controller, as taught by Pettit et al. in the furnace-type atomic absorption spectrophotometer as disclosed by Egan et al. One would have been motivated to do this to provide automated control of the determination of characteristic furnace parameters, as well as provide automated and self-tuning functions as the furnace characteristics change over time. Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the parameter setting means adjust parameters according to kinds of elements to be detected, as taught by Schmider et al., in the spectrophotometer of Egan et al. in view of Pettit et al. One would have been motivated to do this to increase the sensitivity and signal-to-noise ratio of the measurement system, while reducing interfering signals from other materials that may be present in the sample, such as volatile solvents, excess water, and other excess organic and inorganic materials.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

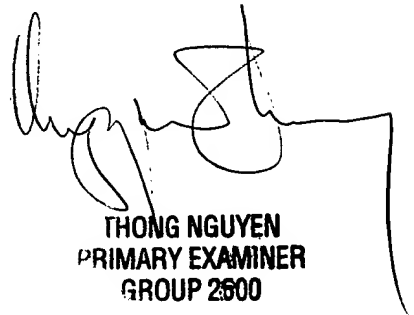
Art Unit: 2872

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Arnel C. Lavarias
2/24/04



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